**IOT BASED AIR AND SOUND POLLUTION MONITORING SYSTEM**

**ABSTRACT:**

Air and sound pollution is a growing issue these days. It is necessary to monitor air quality and keep it under control for a better future and healthy living for all. Here we propose an air quality as well as sound pollution monitoring system that allows us to monitor and check live air quality as well as sound pollution through IOT. System uses air sensors to sense presence of harmful gases/compounds in the air and constantly transmit this data to microcontroller. Also system keeps measuring sound level and reports it to the online server over IOT. The sensors interact with microcontroller which processes this data and transmits it over internet. This allows authorities to monitor air pollution in different areas and take action against it. Also authorities can keep a watch on the noise pollution near schools, hospitals and no honking areas, and if system detects air quality and noise issues it alerts authorities so they can take measures to control the issue.

**BACKGROUND STUDY:**

The main motive of making this project is to make a city smart with the help of new technologies, thus making the life better and also enhancing the quality of services, therefore meeting every individual's needs. Some of the research work made for monitoring the pollution parameters in a particular location in order to make the environment safe and that area smart. Different methods were used in the past and are described in this section [1]. First is Smart Environment Monitoring using Wireless sensor networks [2]in which the main focus was on the developing an environment free of pollution by making it smart. The system to monitor the air of environment using Arduino microcontroller, IOT Technology is proposed to improve quality of air. With the use of IOT technology enhances the process of monitoring various aspects of environment such as air quality monitoring issue proposed in this paper [3]. This paper gives an idea on how we can give instant alert to the authorities. The cost effective IOT technology is used. Hence air and sound pollution is monitored by using this technology [4].The automatic Air and Sound management system is a step forward to contribute a solution to the biggest threat. The air & sound monitoring system overcomes the problem of the highly-polluted areas which is a major issue. It supports the new technology and effectively supports the healthy life concept. This system has features for the people to monitor the amount of pollution on their mobile phones using the application. So, it becomes very reliable and efficient for the Municipal officials along with the Civilians to monitor environment, this concept of IOT is beneficial for the welfare ofthe society. And it is implemented using the latest technology [5].

**METHODOLOGY:**

GPRS

LCD

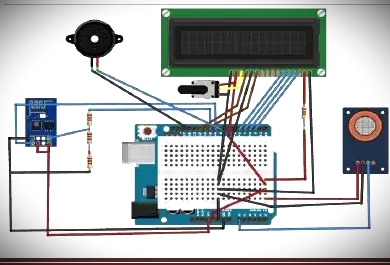
GAS SENSOR

SOUND SENSOR

ARDUINO

**Fig 1**: Block Diagram

The Air and Sound Pollution Monitoring System consists of the Arduino Uno which is based on ATmega328 microcontroller. Arduino is also known as the mind of the device as everything in this system is controlled by the Arduino. The CO sensor and sound sensor need 5V DC for their operation. So, these components draw power from the 5V output of the Arduino board itself. The CO sensor is connected to the analog 0 pin and the sound sensor is connected to the analog 2 pin. These sensors provide the data to the Arduino that is displayed on the LCD display continuously, LCD is connected to 2,3,4,5,11,12 pins in the arduino board. The Arduino board connects with ThingSpeak platform using GPRS module. The sensing of data and sending it to the ThingSpeak server using GPRS module is managed by the Arduino Sketch. The Arduino sketch is written, compiled and loaded to the Arduino board using Arduino IDE. ThingSpeak provides instant visualizations of data posted by the IOT devices to ThingSpeak server.



**Fig 2:** Air and Sound pollution monitoring system that is connected to Laptop [6].

The fig 2 shows the Air and Sound pollution monitoring system that is connected to Laptop. Here we can read Carbon Monoxide(CO) sensor and Sound sensor readings and here Arduino IDE software tool 1.8.3 plays an important role where code is verified, compiled and uploaded here, and after this the code is uploaded to Arduino uno board.

**TIME SCHEDULE:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Task Name** | **Jan 10** | **Jan 19** | **Feb 11** | **Feb28** | **May 8** | **June 7** |
| Planning |  |  |  |  |  |  |
| Research |  |  |  |  |  |  |
| Design |  |  |  |  |  |  |
| Implementation |  |  |  |  |  |  |

**COST ESTIMATION :**

**Table 1:** Estimates of Cost

|  |  |
| --- | --- |
| **Item** | **Price/Cost(TAKA)** |
| Arduino Uno | 640.00 |
| 10k ohm Registor | 14-65 |
| 200 ohm Registor | 12-20 |
| Potentiometer | 2000 |
| Connecting Wires | 10 |

**CONCLUSION:**

This IOT based air and sound pollution monitoring system is a great step towards a healthy livelihood. With the help of this device not only the municipal authorities but even the common people can participate in the process of controlling pollution and ensure safe environment. The device itself is very eco-friendly and does not harm the environment in any way. Moreover, it is based on one of the modern technology and also inexpensive. In this proposed work we described a real-time monitoring system for the monitoring of concentration of CO levels in the atmosphere and sound pollution in the environment. For this purpose, the system uses MQ-7 sensor to sense presence of CO levels in the air and constantly transmit this data to microcontroller. The system also keeps measuring sound level and reports it to the online server over IoT. The sensors interact with microcontroller which processes this data and transmits it over internet. This allows authorities to monitor air pollution in different areas and take action against it. Authorities also can keep a watch on the noise pollution near schools, hospitals and no honking areas, and

**REFERENCES :**

|  |  |
| --- | --- |
| [1] | Meng-Shiuan Pan and Yu-Chee Tseng, "ZigBee Wireless SensorNetworks and Their Applications," vol. 30010, 2007. |
| [2] | Hemant Ghayvat,SubhasMukhopadhyay,Xiang Gui and NagenderSuryadevara, "WSN- and IOT based Smart Homes and Their Extension to Smart Buildings," *Sensors 2015, 15,* vol. doi:10.3390/s150510350, pp. 10350- 10379, 2015. |
| [3] | Navreetinder Kaur, Rita Mahajan, Deepak Bagai, "Air Quality Monitoring System based on Arduino Microcontroller," *International Journal Innovative Research in Science ,Engineering and Technology(IJIRSET),*  Vol-5, no. Issue 6- June, 2016. |
| [4] | Dhrubil Shah, Prathmess Kudale, Prasad Shirwadkar, Samuel Jacob, "Iot Based Air and Sound Pollution Supervising System, IOSR Journal of Engineering," 2018. |
| [5] | Arushi Singh ,Divya Pathak, Prachi Pandit,Shruti Patil,Prof. Priti. C. Golar, "IOT based Air and Sound Pollution Monitoring System," *International Journal of Advanced Research in Electrical,Electronics and Instrumentation Engineering,* 2017.  [6] https://html.scribdassets.com/5domrrglxc64wxhc/images/3-266dcc17ed.jpg |